# Physical Activity



*The Youth Risk Behavior Survey includes questions on intensity, frequency, and duration of exercise; strength training; physical education class; sporting teams; television viewing; and injury due to exercise or sports.*

## Overall Trends

**Reported physical activity among Lancaster County teens increased over the 1990s in the areas of strength training, team sports and moderate physical activity; vigorous physical activity changed little (Figure 1).**

In 1999, one-third (67.6%) of teens reported engaging in vigorous physical activity (20 or more minutes of exercise that causes one to sweat or breath hard) on three or more of the previous seven days. This represents no improvement from 1991 (67.9%).

However, there were increases during the 1990s in two other important measures. Reports of engaging in moderate physical activity (30 or more minutes that do not cause one to sweat or breath hard) on five or more of the previous seven days increased overall from 1993 (19.3%) to 1999 (28.1%). Also, the percentage of teens who reported exercising on three or more of the of the previous seven days to strengthen or tone muscles increased from 48.6% (1991) to 58.4% (1999).

From 1991 to 1999, there was little change in the percentage of teens who reported that they were currently enrolled in a school physical education class.

The percentage of teens reporting that they participated on a sports team during the past 12 months increased overall from 1991 to 1995 but not since 1993.

These trends in reported physical activity held true among respondents of different grades, males as well as females, and white and non-white teens. See the following pages for detail.

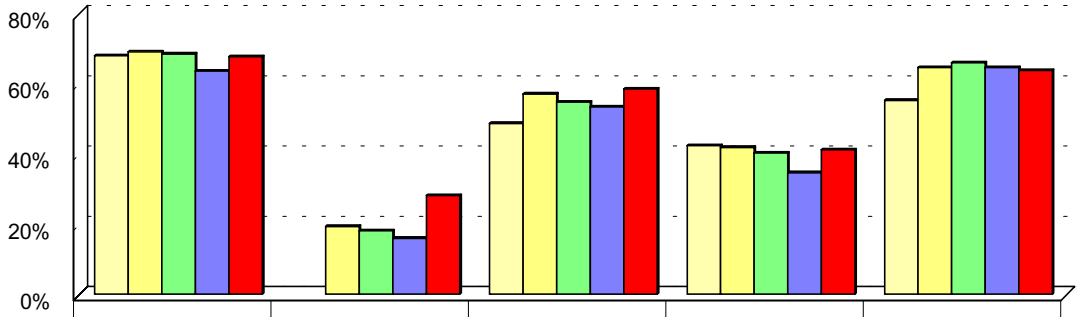
Lancaster County trends (1991-1999) were quite similar to U.S. trends (1993-1999)[2] on these physical activity indicators. However, increasing reports of moderate exercise and strengthening exercise in Lancaster County and the U.S. contrast with level trends in Nebraska (1993-1997)[1].

1 Tables published by Buffalo Beach Company, Lincoln, NE

2 Centers for Disease Control and Prevention: Youth Risk Behavior Trends Fact Sheet, <http://www.cdc.gov/nccdphp/dash/yrbs/trend.htm>; *MMWR* Surveillance Summaries 1999, 1997, 1995, 1993.

### Figure 1: Physical Activity*

High School Students




| | Vigorous Physical Activity † | Moderate Physical Activity †† | Strengthening Exercises ‡ | PE Class at School ‡‡ | Played on Sports Teams ‡‡‡ |
|---|---|---|---|---|---|
| 1991 | 67.9% | | 48.6% | 42.3% | 55.2% |
| 1993 | 69% | 19.3% | 57% | 41.8% | 64.5% |
| 1995 | 68.4% | 18.1% | 54.7% | 40.2% | 65.9% |
| 1997 | 63.5% | 15.9% | 53.3% | 34.6% | 64.5% |
| 1999 | 67.6% | 28.1% | 58.4% | 41.1% | 63.7% |

† physical activity that made you sweat and breathe hard for at least 20 minutes, on 3 or more of the previous 7 days
†† physical activity that did not make you sweat or breathe hard, for at least 30 minutes, on 5 or more of the previous 7 days
‡ strenghened or toned muscles, on 3 or more of the previous 7 days
‡‡ have physical education class on 1 or more days in average week at school
‡‡‡ played on 1 or more sports teams in the past 12 months, either run by school or community groups

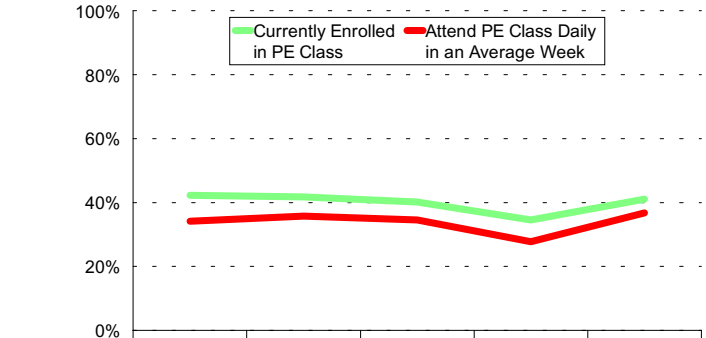
*Grade Adjusted

## Physical Education Class, Sports/Exercise Injuries, and T.V. Viewing

### Rates of reported teen participation in school physical education did not change during the 1990s.

From 1991 to 1999, as previously shown **(Fig. 1)**, two in five teens (41.1% in 1999) reported that they were currently enrolled in a physical education class in school. A slightly smaller percentage (36.8% in 1999) reported attending physical education class daily **(Fig. 2)**. Neither changed notably during the 1990s.

Figure 2: Physical Education Class (at School)
High School Students

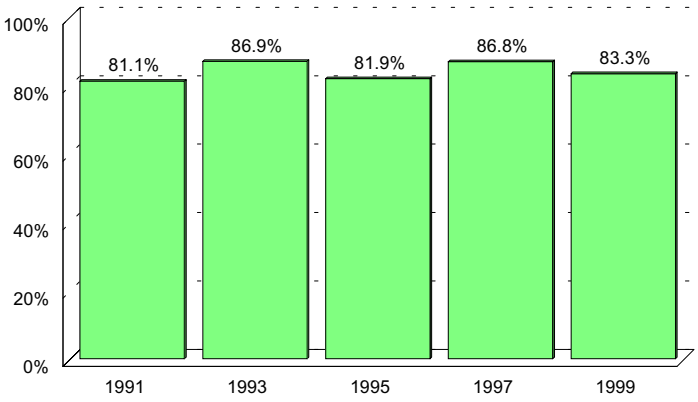



| | 1991 | 1993 | 1995 | 1997 | 1999 |
|---|---|---|---|---|---|
| Currently Enrolled in PE Class | 42.3% | 41.8% | 40.2% | 34.6% | 41.1% |
| Attend PE Class Daily in an Average Week | 34.2% | 35.7% | 34.6% | 27.8% | 36.8% |

*Grade Adjusted

Among teens who were enrolled in physical education class at school, the great majority (83.3% in 1999) reported that they actually exercise or play sports more than 20 minutes during an average physical education class. This percentage did not increase substantially during the 1990s **(Fig. 3)**.

Figure 3: Exercise 21 or More Minutes In an Average PE Class*
High School Students Currently Enrolled in School PE Class




*Grade Adjusted

### The 1999 survey included two new questions on television viewing and injuries due to physical activity.

Responses indicated that:

- 29.1% of teens reported watching three or more hours of television on an average school day.
- 40.6% of teens reported that during the past 12 months they were injured while exercising, playing sports, or being physically active and as a result had to be treated by a doctor or a nurse.

# Physical Activity

## Differences by Gender

**A clear gender gap exists in the area of teen physical activity. During the 1990s, male teens continued to report more vigorous, moderate, and strengthening physical activity than female teens, and were more likely to report participation on a sporting team or in a physical education class. Increases in moderate physical activity, strengthening exercise, and team participation were reported by females (Figs. 4 - 6).**

In 1999, male teens were 1.2 times more likely than female teens to report engaging in vigorous physical activity (20 or more minutes of exercise that causes one to sweat or breathe hard) on three or more of the previous seven days **(Fig. 4)**. The gap between males and females has not changed overall since 1991, nor was there an increase or decrease for either sex.

Among both males and females, an increasing percentage of teens from 1993 to 1999 reported that they engaged in moderate physical activity (30 or more minutes of exercise that does not cause one to sweat or breathe hard) on five or more of the previous seven days **(Fig. 4)**.

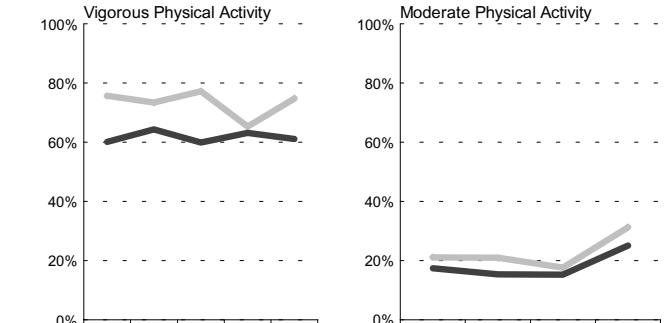
An increasing percentage (1991-1999) of both male and female teens also reported that they engaged in exercise to strengthen or tone their muscles on three or more of the previous seven days **(Fig. 5)**. With strong increases among females in particular, the gender gap decreased from a 1.5 (1991) to a 1.2 (1999) times greater likelihood of males to report engaging in strengthening exercise.

There was no overall change during the 1990s in reported participation of male and female teens in a physical education class **(Fig. 6)**. In 1999, males more likely (51.0%) than females (32.3%) to report being in a physical education class.

From 1991 to 1993, both male and female teens increasingly reported participation on a sports team (either a school run or community team) during the past 12 months **(Fig. 6)**. Since 1993, however, there has been little improvement. There was no change in the gender gap, with males continuing to report sports team participation at a higher rate (69.9%) than females (57.9%) in 1999.

In 1999, males were more likely (33.9%) than females (24.7%) to report watching three or more hours of television per average school day. Also in 1999, males were more likely (45.0%) than females (35.9%) to report that during the past 12 months they were injured exercising, playing sports, or being physically active, and as a result had to be treated by a doctor or a nurse.

### Figure 4: Physical Activity Level*
High School Students

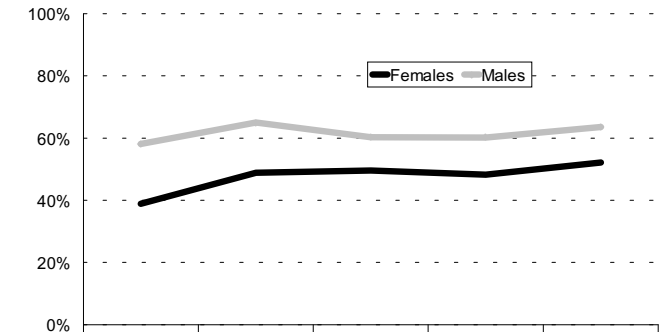



| | 1991 | 1993 | 1995 | 1997 | 1999 |
|---|---|---|---|---|---|
| Females | 60.1% | 64.4% | 59.9% | 63.2% | 61.1% |
| Males | 75.7% | 73.4% | 77.2% | 65.3% | 74.8% |

| | 1993 | 1995 | 1997 | 1999 |
|---|---|---|---|---|
| Females | 17.4% | 15.3% | 15.2% | 25.1% |
| Males | 21.1% | 21% | 17.6% | 31.2% |

*Grade Adjusted

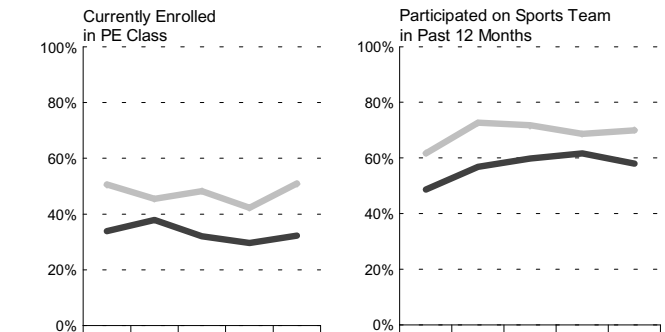
### Figure 5: Exercised to Strengthen Muscles*
High School Students




| | 1991 | 1993 | 1995 | 1997 | 1999 |
|---|---|---|---|---|---|
| Females | 38.9% | 48.9% | 49.6% | 48.2% | 52.1% |
| Males | 58.1% | 65% | 60.3% | 60.2% | 63.6% |

*Grade Adjusted

### Figure 6: Physical Education Class and Sports Teams*
High School Students




| | 1991 | 1993 | 1995 | 1997 | 1999 |
|---|---|---|---|---|---|
| Females | 33.8% | 37.9% | 32% | 29.6% | 32.3% |
| Males | 50.6% | 45.5% | 48.2% | 42.2% | 51% |

| | 1991 | 1993 | 1995 | 1997 | 1999 |
|---|---|---|---|---|---|
| Females | 48.7% | 56.8% | 59.8% | 61.6% | 57.9% |
| Males | 61.6% | 72.7% | 71.7% | 68.6% | 69.9% |

*Grade Adjusted

# Physical Activity

## Differences by Grade

**Teens in ninth grade have been slightly more likely than teens in older grades to report physical activity by various indicators. Increases in moderate physical activity were reported in older grades (Figs. 7 - 9).**

During the 1990s, 9th grade teens appeared more likely than teens in older grades to report vigorous physical activity, but statistically there was no significant difference among grades. In 1999, for example, 77.7% of 9th graders, 66.3% of 10th graders, 63.5% of 11th graders and 62.7% of 12th graders reported engaging in activity that made them sweat or breathe hard for at least 20 minutes, on three or more days in the past week **(Fig. 7)**. Patterns were similar in previous years.

During the 1990s, an increasing percentage of teens in the 10th, 11th, and 12th grades reported moderate physical activity (that did not make them sweat or breathe hard, for 30 minutes or more) on five or more of the previous seven days **(Fig. 8)**.

In addition, all four grades appeared to report increases, 1991-1999, in the percentage who exercised to strengthen or tone muscles on three or more of the previous seven days **(Fig. 9)**. However, only the increase by 10th graders was statistically significant.

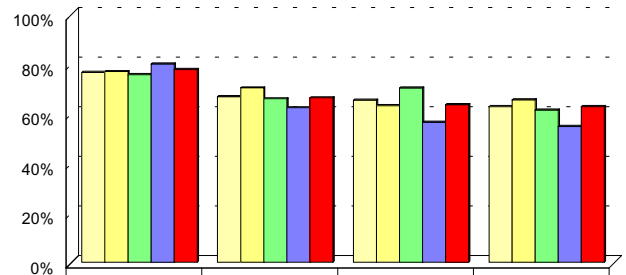
As in the case of teens as a whole **(Fig. 1)**, the percentage of teens reporting current enrollment in physical education class at school did not increase or decrease during the 1990s for any grade (no graph shown here).

Over the 1990s, teens in all four grades increasingly reported that they participated on a sports team (either a school run or community team) during the past 12 months. In 1999 and previous years, 9th graders appeared most likely to report participation in team sports (72.2%), followed by 10th (65.0%), 11th (61.7%), and 12th (55.2%) graders, but there were no statistically significant differences among these rates.

In 1999, the percentage of teens reporting that they watch three or more hours of television per average school day varied from 34.6% among 9th graders to 31.5% among 10th graders, 23.5% among 11th graders and 26.5% among 12th graders.

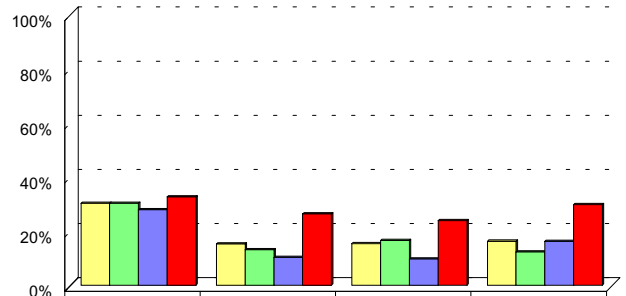
In 1999, nearly half of all 9th grade teens (47.3%) reported that during the past 12 months they were injured exercising, playing sports, or being physically active and had to be treated by a doctor or a nurse. This compares to other grades as follows: 39.5% (12th), 38.4% (10th), and 37.0% (11th).

Figure 7: Vigorous Physical Activity by Grade
High School Students



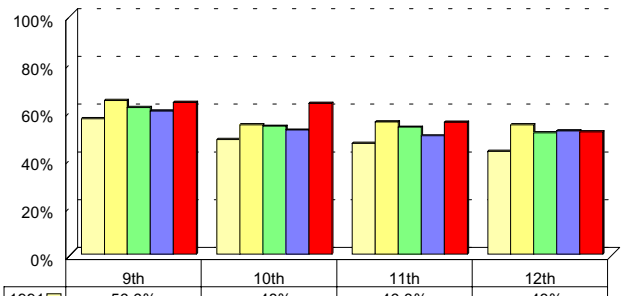

| | 9th | 10th | 11th | 12th |
|---|---|---|---|---|
| 1991 | 76.6% | 66.7% | 65.3% | 62.8% |
| 1993 | 76.9% | 70.3% | 63.1% | 65.5% |
| 1995 | 75.7% | 65.9% | 70.2% | 61.3% |
| 1997 | 79.9% | 62.3% | 56.4% | 54.8% |
| 1999 | 77.7% | 66.3% | 63.5% | 62.7% |

Figure 8: Moderate Physical Activity by Grade
High School Students




| | 9th | 10th | 11th | 12th |
|---|---|---|---|---|
| 1993 | 30.2% | 15.2% | 15.3% | 16.2% |
| 1995 | 30.2% | 13.1% | 16.5% | 12.2% |
| 1997 | 27.8% | 10.2% | 9.6% | 16.1% |
| 1999 | 32.6% | 26.3% | 23.8% | 29.7% |

Figure 9: Strengthening Exercise by Grade
High School Students




| | 9th | 10th | 11th | 12th |
|---|---|---|---|---|
| 1991 | 56.6% | 48% | 46.3% | 43% |
| 1993 | 64.3% | 54.1% | 55.3% | 54.1% |
| 1995 | 61.3% | 53.5% | 53.1% | 50.8% |
| 1997 | 59.9% | 51.9% | 49.5% | 51.6% |
| 1999 | 63.5% | 63.1% | 55.2% | 51.2% |

**During the 1990s, white and non-white teens reported physical activity at similar rates on various indicators (Figs. 10 - 12).**

YRBS sample sizes for major race/ethnic groups (Black, Hispanic, American Indian or Asian) were not sufficient to reliably compare these groups or examine trends over time. However, selected comparisons were feasible between white teens and those who may be classified as "non-white" -- of minority race or Hispanic ethnicity.

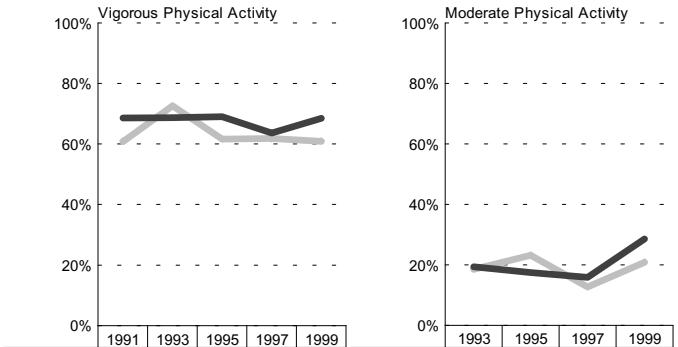
There was little change from 1991 to 1999 in the likelihood of both white and non-white teens to report regular physical activity characterized as:

- vigorous -- 20 or more minutes of exercise that causes one to sweat or breathe hard on three or more of the previous seven days **(Fig. 10)**
- moderate -- 30 or more minutes of exercise that does not cause one to sweat or breathe hard on five or more of the previous seven days **(Fig. 10)**. Both white an non-white teens were noticeably more likely in 1999 than in previous years to report involvement in moderate physical activity.
- strengthening -- exercise to strengthen or tone muscles on three or more of the previous seven days **(Fig. 11)**
- enrollment in school physical education class **(Fig. 12)**
- participation on a sports team in the past 12 months, whether a school run or community team **(Fig. 12)**. White teens in 1999 were more likely (65.1%) than non-white teens (49.8%) to report sports team participation.

In 1999, non-white teens were more likely (48.0%) than white teens (27.0%) to report watching three or more hours of television per average school day.

Statistically, white and non-white teens were similarly likely (41.3% and 36.2%, respectively) to report that they had to be treated by a doctor or a nurse for an injury received while exercising, playing sports, or being physically active.

Figure 10: Physical Activity Level*
High School Students

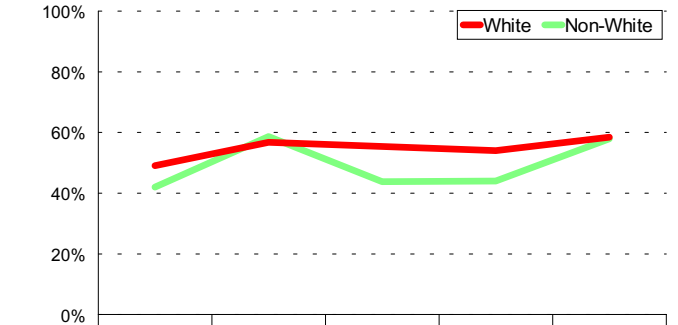



| | 1991 | 1993 | 1995 | 1997 | 1999 |
|---|---|---|---|---|---|
| White | 68.6% | 68.7% | 69% | 63.6% | 68.5% |
| Non-White | 60.8% | 72.6% | 61.6% | 61.8% | 60.9% |

| | 1993 | 1995 | 1997 | 1999 |
|---|---|---|---|---|
| White | 19.4% | 17.5% | 15.9% | 28.6% |
| Non-White | 18.5% | 23.2% | 12.7% | 20.8% |

*Grade Adjusted

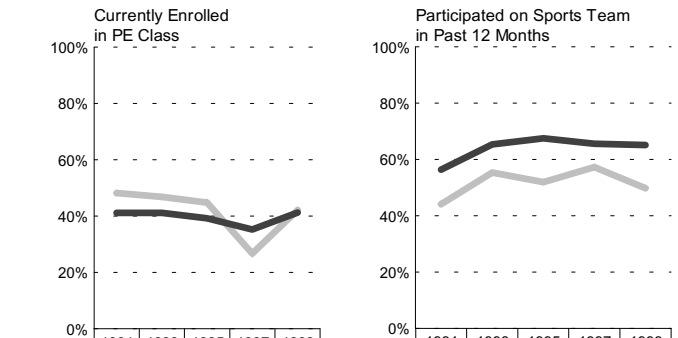
Figure 11: Exercised to Strengthen Muscles*
High School Students




| | 1991 | 1993 | 1995 | 1997 | 1999 |
|---|---|---|---|---|---|
| White | 49.1% | 56.8% | 55.4% | 54% | 58.4% |
| Non-White | 42% | 58.7% | 43.8% | 44% | 57.9% |

*Grade Adjusted

Figure 12: Physical Education Class and Sports Teams*
High School Students




| | 1991 | 1993 | 1995 | 1997 | 1999 |
|---|---|---|---|---|---|
| White | 41.1% | 41.2% | 39.2% | 35.2% | 41.3% |
| Non-White | 48.2% | 46.8% | 44.8% | 26.7% | 42.2% |

| | 1991 | 1993 | 1995 | 1997 | 1999 |
|---|---|---|---|---|---|
| White | 56.3% | 65.3% | 67.5% | 65.5% | 65.1% |
| Non-White | 44.1% | 55.3% | 51.9% | 57.3% | 49.8% |

*Grade Adjusted

# Physical Activity



***Health Objectives for the Year 2010:*** *Improve the health, fitness, and quality of life of all Lancaster County residents and reduce their chronic disease risk by promoting regular daily physical activity and optimal nutrition status.*

## Public Health Discussion

Adolescents and adults, both male and female benefit from physical activity. For teens, regular physical activity improves strength, builds lean muscle, and decreases body fat. It can build stronger bones to last a lifetime. As one gets older, physical activity helps maintain healthy bones, muscles, and joints, control weight, build lean muscle, and reduce fat. Physical activity prevents or delays the development of high blood pressure and helps reduce blood pressure in some adolescents with hypertension.[1]

**"With a foundation of positive values, age appropriate sports and recreational activities provide a lifetime of valuable outcomes."**

*Barb Bettin, Executive Director*
*Youth Sports Branch, YMCA*

The 1999 National Youth Risk Behavior Survey indicated nearly half of American youths aged 12-21 years are not vigorously active on a regular basis. About 14% of young people reported no recent physical activity. Inactivity is more common among females (14%) than males (7%) and among black females (21%) than white females (12%). Participation in all types of physical activity declines strikingly as age or grade in school increases.

Physical activity need not be strenuous to be beneficial. Moderate amounts of daily physical activity are recommended for people of all ages. This amount can be obtained in longer sessions of moderately intense activities, such as brisk walking for 30 minutes, or in shorter sessions of more intense activities, such as jogging or playing basketball for 15-20 minutes. Greater amounts of physical activity are even more beneficial, up to a point. A moderate amount of physical activity is roughly equivalent to physical activity that uses approximately 150 calories of energy per day, or 1,000 calories per week. Excessive amounts of physical activity can lead to injuries, menstrual abnormalities, and bone weakening. Examples of moderate amounts of activity include: washing and waxing a car, washing windows, playing volleyball, touch football, basketball, gardening, bicycling, dancing, walking, jumping rope, and shoveling snow.[2]

## Parental Roles and Responsibilities:

**Parents can help their children maintain a physically active lifestyle by providing encouragement and opportunities for physical activity.**


Family events can include opportunities for everyone in the family to be active. If physical activity ranks high with the adults of the house, it is more likely to be a priority to the youth. Quality communication time can be created with youth if adults interact in physical activities that both enjoy. Moderate amounts of physical activity can be achieved in a variety of ways. Activities that fit into your lives and vary with frequency, intensity and duration are both healthy and enjoyable.

## Community Roles and Responsibilities:

### Lincoln and Lancaster County residents can encourage physical activity by:

1. Providing quality, preferably daily, K-12 physical education classes and hiring physical education specialists to teach them.
2. Creating opportunities for physical activities that are enjoyable, that promote adolescents' and young adults' confidence in their ability to be physically active, and that involve friends, peers and parents.
3. Providing appropriate physically active role models for youths.
4. Providing access to school buildings and community facilities that enable safe participation in physical activities.
5. Providing a range of extracurricular programs in schools and community recreation centers to meet the needs and interests of specific adolescent and young adult populations, such as racial and ethnic minority groups, females, persons with disabilities, and low-income groups.
6. Encouraging health care providers to talk routinely to adolescents and young adults about the importance of incorporating physical activity into their lives.

## Policy Makers' Roles and Responsibilities:

### The Center for Disease Control and Prevention (CDC) provides scientific and technical leadership and assistance to public and private organizations to promote physical activity.

The National Physical Activity Initiative is the primary focus for these efforts and reflects CDC's commitment to reduce the major risk factors for chronic disease in the United States. The Initiative has seven key components: 1) Program research and development, 2) Public information and education, 3) Professional education, 4) Policy and environmental guidelines development, 5) Coordination of leadership, 6) Surveillance and 7) evaluation. Working with this initiative, Lincoln and Lancaster County residents could expect to strengthen youth understanding of physical activity and its value to a healthy future. Community resources to network this initiative include nutrition and physical activity specialists working in cardiovascular risk reduction programs, specialists working in diabetes prevention programs, and comprehensive school health programs.

**References:**

1. Lincoln-Lancaster County Health Department. "Healthy People 2010: Health Objectives for the Year 2010 for Lincoln and Lancaster County Nebraska." January 2000.

2. National Heart, Lung and Blood Institute. "Obesity Education Initiative: Patient and Public Education Materials." 2000. http://www.nhlbi.nih.gov/health/public/heart/obesity/lose